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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,794	11/07/2003	Toru Hirai	51270-305144	4793

7590 04/10/2007  
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EXAMINER
BRINEY III, WALTER F

ART UNIT	PAPER NUMBER
2615	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/10/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/705,794	<b>Applicant(s)</b> HIRAI ET AL.	
	<b>Examiner</b> Walter F. Briney III	<b>Art Unit</b> 2615	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11-21, 41-48 and 53-71 is/are pending in the application.
- 4a) Of the above claim(s) 16-20, 41-48, 61, 62, 67 and 68 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-15, 21, 53-60, 63-66 and 69-71 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>29 January 2007</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

This application is in condition for allowance except for the presence of claims 16-20, 41-48, 61, 62, 67, and 68 are directed to species non-elected without traverse.

### *Allowable Subject Matter*

The following is a statement of reasons for the indication of allowable subject matter:

1. Claims 11-15, 21, 53-60, 63-66 and 69-71 are allowed.

Claims 11, 13, 53, 55, 56, 58, 59, 63 and 65 are limited to "a stereo echo canceller; a multi-channel echo cancel method; and a transfer function calculation apparatus." The prior art is replete with stereo echo cancellers, however, none are arranged as particularly recited in this claim. For example, Berthault et al. (US Patent 6,738,480) discloses a device for cancelling stereophonic echo with frequency domain filtering. See Abstract. Figure 1 depicts a "microphone" 8, which according to column 5, line 65, through column 6, line 4, can be duplicated to provide echo cancellation for a second "microphone," and two "loudspeakers" 7, thereby forming the "four audio transfer systems." Figure 1 depicts the "first and third filter sections," and as noted above, the first and third are duplicated to provide "second and fourth filter sections." Figure 1 depicts a subtractor 17 that corresponds to "the first subtracting section." Again, the subtractor is duplicated in a second echo canceller, the duplicated subtractor corresponds to "the second subtracting section." Figure 1 depicts an adaptation section

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20 that corresponds to the "transfer function calculating section." The adaptation section includes a coherence calculation section 40 (i.e. a cross-spectrum calculator) that is used to generate a parameter used in transfer function calculations as recited. However, said coherence calculation section does not perform a calculation between "a sum signal and difference signal of stereo audio signals to be reproduced by said respective loudspeakers and the collected audio signals." Nor does it perform a calculation between "a set of a plurality of low-correlation composite signals." Instead, the coherence calculation section performs a calculation based on  $X_1$  and  $X_2$ , which are simply stereo audio signal to be reproduced. In this way, Berthault fails to anticipate the limitations of independent claims 11, 13, 53, 55, 56, 58, 59, 63 and 65, which require either "calculating transfer functions from a cross-spectrum calculation between sum and difference signals" or "determining reference signals as a set of a plurality of low-correlation composite signals obtained by suitably combining said multi-channel audio signals." Therefore, claims 11, 13, 53, 55, 56, 58, 59, 63 and 65 are allowable over Berthault.

**Claims 12, 14, 15, 21, 54, 57, 60, 64, 66 and 69-71** depend variously on claims 11, 13, 53, 55, 56, 58, 59, 63 and 65, and are allowable over the cited prior art for at least the same reasons.

### ***Conclusion***

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F. Briney III whose telephone number is 571-272-7513. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 571-272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**SINH TRAN**  
**SUPERVISORY PATENT EXAMINER**

wfb  
3/30/07